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Serial No.: 10/766,139  
Docket No.: PVI-5541DIVCON  
Amendment dated March 13, 2007  
Responsive to the Office Action dated January 29, 2007

MAR 13 2007

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

5 Listing of claims:

1-17. (Canceled)

10 18. (Currently amended) A two-part prosthetic heart valve for implantation within a native heart valve, comprising:

a substantially cylindrical tissue-engagable engaging base portion expandable from a collapsed state to an expanded state, the collapsed state sized for delivery through a delivery catheter to a heart valve annulus and the expanded state sized to contact the heart valve annulus; and

15 a leaflet subassembly including a self-expandable metallic support structure and three heart valve leaflets, the leaflets being attached to the support structure at commissures, wherein the support structure has a fabric covering and the three heart valve leaflets are attached to the support structure at least in part by stitches along the fabric covering; and

20 mechanical coupling members on the tissue-engagable base portion and leaflet subassembly for allowing the leaflet subassembly to mechanically couple to the tissue-engagable base portion, wherein the mechanical coupling members on the tissue-engagable base comprising axial posts configured for connection to the mechanical coupling members on the leaflet subassembly;

25 wherein the tissue-engagable engaging base portion and leaflet subassembly are separate components and the leaflet subassembly is configured to mechanically connect to

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the tissue-engagable engaging base portion at the time of an implant procedure for providing a prosthetic heart valve.

19. (Previously presented) The two-part prosthetic heart valve of claim 18, wherein  
5 the support structure comprises a wireform and wherein the three heart valve leaflets are attached to the wireform.

20. (Canceled)

10 21. (Previously presented) The two-part prosthetic heart valve of claim 18, wherein the support structure comprises an elastic wireform for supporting the leaflets and wherein the wireform provides alternating commissures and cusps.

15 22. (Previously presented) The two-part prosthetic heart valve of claim 18, wherein the three heart valve leaflets are individual leaflets attached to the support structure separately from each other.

23. (Canceled)

20 24. (Previously presented) The two-part prosthetic heart valve of claim 18, wherein the three heart valve leaflets are formed of bioprosthetic tissue.

25 25. (Currently amended) The two-part prosthetic heart valve of claim 18, wherein the tissue-engagable engaging base portion is plastically-expandable from its collapsed state to its expanded state.

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26. (Currently amended) The two-part prosthetic heart valve of claim 18, wherein the tissue-engagable engaging base portion is self-expandable from its collapsed state to its expanded state.

5 27-37. (Canceled)

38. (Currently amended) A two-part prosthetic heart valve for implantation within a native heart valve, comprising:

10 a tissue-engagable engaging base expandable from a collapsed state to an expanded state, the collapsed state sized for advancement through a patient's vasculature to a heart valve annulus and the expanded state sized to engage the heart valve annulus and having an outflow end, the tissue-engagable engaging base having an outflow rim and a plurality of commissure posts rigidly attached to extend beyond the outflow rim end and a plurality of cusp posts rigidly attached to extend beyond the outflow rim end;

15 a leaflet subassembly including a support structure and three heart valve leaflets, the leaflets being attached to the support structure at their commissures, wherein the support structure comprises an elastic wireform for supporting the leaflets and wherein the wireform provides alternating commissures and cusps; and

20 a plurality of discrete mating connectors on the leaflet subassembly and tissue-engagable engaging base, one each on the leaflet subassembly and base forming a pair of mating connectors, the mating connectors configured to mechanically couple the leaflet subassembly to the tissue-engagable engaging base when the tissue-engagable engaging base is in the expanded state, each commissure post and cusp post having one of the mating connectors thereon for securely coupling to a mating connector on one of the commissures and cusps of the elastic wireform.

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39. (Currently amended) The two-part prosthetic heart valve of claim 38, wherein the tissue-engagable engaging base is plastically-expandable from the collapsed state to the expanded state.

5 40.-42. (Canceled)

43. (Currently amended) The two-part prosthetic heart valve of claim 38, wherein each pair of the mating connectors joins by axially displacing the leaflet subassembly toward the tissue-engagable engaging base.

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44. (Currently amended) A two-part prosthetic heart valve for implantation within a native heart valve, comprising:

15 a tissue-engagable engaging base expandable from a collapsed state sized for advancement through a delivery catheter to an expanded state sized to contact the valve annulus, the tissue-engagable engaging base generally defining a tubular body having an inflow end and an outflow rim end; and

20 a leaflet subassembly including three heart valve leaflets, wherein the tissue-engagable engaging base and leaflet subassembly are separate components and the leaflet subassembly is adapted to mechanically coupled to the tissue-engagable engaging base at the time of an implant procedure to form a prosthetic heart valve;

wherein, after assembly, the three heart valve leaflets are axially spaced from the outflow rim end of the tubular body such that the heart valve leaflets are not positioned within the tubular body.

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45. (Currently amended) The two-part prosthetic heart valve of claim 44, wherein the tissue-engagable engaging base is plastically-expandable from its collapsed state to its expanded state.

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46. (Previously presented) The two-part prosthetic heart valve of claim 44, wherein the leaflet subassembly comprises an elastic wireform having alternating commissures and cusps for supporting the three heart valve leaflets.

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47. (Currently amended) The two-part prosthetic heart valve of claim 46, wherein the leaflet subassembly is configured to mechanically couple to the tissue-engagable engaging base along a plurality of discrete locations.

10 48. (Currently amended) The two-part prosthetic heart valve of claim 44, further comprising mechanical coupling members on the tissue-engagable engaging base and leaflet subassembly for allowing the leaflet subassembly to mechanically couple to the tissue-engagable engaging base.

15 49. (Currently amended) The two-part prosthetic heart valve of claim 48, wherein the mechanical coupling members on the tissue-engagable engaging base comprise axial posts configured for connection to the mechanical coupling members on the leaflet subassembly.

20 50. (Currently amended) A two-part prosthetic heart valve for implantation within a native heart valve, comprising:

a tissue-engagable engaging base expandable from a collapsed state to an expanded state, the collapsed state sized for advancement through a patient's vasculature to a heart valve annulus and the expanded state sized to engage the heart valve annulus; a leaflet subassembly including a support structure and three heart valve leaflets, the leaflets being attached to the support structure at their commissures; and a plurality of discrete mating connectors on the leaflet subassembly and tissue-engagable engaging base, one each on the leaflet subassembly and base forming a pair of

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5 mating connectors, wherein axial displacement of the leaflet subassembly toward the expanded tissue-engageable base actuates a mutual coupling mechanism on the pairs of mating connectors so as to mechanically couple the leaflet subassembly to the tissue-engageable base the mating connectors configured to join simultaneous with axial displacement of the leaflet subassembly toward the tissue engaging base when the tissue-engaging base is in the expanded state so as to mechanically couple the leaflet subassembly to the tissue-engaging base.

10 51. (Currently amended) The two-part prosthetic heart valve of claim 50, wherein the tissue-engagable engaging base is plastically-expandable from the collapsed state to the expanded state.

15 52. (Previously presented) The two-part prosthetic heart valve of claim 50, wherein the support structure comprises an elastic wireform for supporting the leaflets and wherein the wireform provides alternating commissures and cusps.

20 53. (Previously presented) The two-part prosthetic heart valve of claim 52, wherein mating connectors on the leaflet subassembly are provided on each of the commissures and cusps of the elastic wireform.

54. (Currently amended) The two-part prosthetic heart valve of claim 52, further including a plurality of commissure posts rigidly attached to the tissue-engagable engaging base so as to extend generally axially beyond the outflow rim end, and a plurality of cusp posts rigidly attached to the tissue-engagable engaging base so as to extend beyond the outflow rim end, each commissure post and cusp post having one of the mating connectors thereon for securely coupling to a mating connector on one of the commissures and cusps of the elastic wireform.

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55. (Previously presented) The two-part prosthetic heart valve of claim 50, wherein the mating connectors are joined together by axial compression.

56. (Previously presented) The two-part prosthetic heart valve of claim 55, wherein the mating connectors are configured to snap fit together.

57. (Previously presented) The two-part prosthetic heart valve of claim 55, wherein one of each pair of mating connectors comprises a partial circle opening in an axial direction toward the other of the pair.

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58. (New) A two-part prosthetic heart valve for implantation within a native heart valve, comprising:

15        a tissue-engagable base expandable from a collapsed state sized for advancement through a delivery catheter to an expanded state sized to contact the valve annulus, the tissue-engagable base generally defining a tubular body having an inflow end and an outflow rim; and

20        a leaflet subassembly including three heart valve leaflets, wherein the tissue-engagable base and leaflet subassembly are separate components and the leaflet subassembly is mechanically coupled to the tissue-engagable base to form a prosthetic heart valve; and

25        mechanical coupling members on the tissue-engagable base and leaflet subassembly for allowing the leaflet subassembly to mechanically couple to the tissue-engagable base, wherein the mechanical coupling members on the tissue-engagable base comprises axial posts configured for connection to the mechanical coupling members on the leaflet subassembly;

              wherein the three heart valve leaflets are axially spaced from the outflow rim of the tubular body such that the heart valve leaflets are not positioned within the tubular body.